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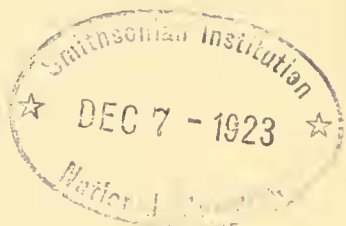
**EXPEDITION OF THE CALIFORNIA ACADEMY  
OF SCIENCES TO THE GULF OF  
CALIFORNIA IN 1921<sup>1</sup>**

**THE BIRDS**

BY

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Extremely few mammals were obtained on this expedition, and as no notes of value concerning mammals were kept by Mr. Virgil W. Owen, who represented the departments of Ornithology and Mammalogy, nor by any other member of the party, there is not sufficient material at hand upon which to base a mammalogical report. The following ornithological report is compiled partly from the data accompanying the eggs and very limited number of birds collected by Mr. Owen, but principally from a series of excerpts concerning the birds, which Mr. Joseph R. Slevin, in charge of the expedition, very kindly segregated from his field notes in order to furnish assistance in making out as full a report for these two departments as might be possible under such adverse circumstances.

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<sup>1</sup>A map showing all the islands, etc., visited by this Expedition will be found in Vol. XII, No. 6, of these Proceedings, copies of which can be supplied at nominal cost.

August 21, 1923

As Mr. Slevin was not familiar with all the species of birds met with, no specific names are given here unless identity is certain.

The expedition started from Guaymas, Mexico, in the gasoline power boat *Silver Gate*, Captain John Ross, Master, with orders to proceed northwesterly along the coast of Sonora, touching at each island of any size, until Georges Island (about N. Lat. 31°), near the northern end of the Gulf of California, was reached; then to cross the gulf and proceed in a southerly direction along the eastern shore of the peninsula of Lower California to about N. Lat. 24°; then to return northward as far as the time limit might allow, revisiting some of the more important islands on the way; and then to return to Guaymas.

The first island reached was San Pedro Nolasco, a short distance northwest of Guaymas, on April 17. Here the California Brown Pelican (*Pelecanus californicus*) was found to be quite numerous, with many nests containing young almost ready to fly. The Brewster Booby (*Sula brewsteri*) also was nesting here, with incubation far advanced as shown by the eggs taken by the party. Ravens were quite plentiful, but small land birds were scarce. Among the latter the Ashthroated Flycatcher (*Myiarchus cinerascens cinerascens*), Western Chipping Sparrow (*Spizella passerina arizonæ*), and the Desert Sparrow (*Amphispiza bilineata deserticola*) were collected, while some other finches and an unidentified hummingbird were noticed.

San Pedro Martir Island was reached on April 18, but no nesting colonies were found. In fact, the island seemed to have been deserted by sea birds. A few Ravens, some finches and one hummingbird were all the land birds noticed. Among the finches, was the San Lucas House Finch (*Carpodacus mexicanus ruberrimus*), of which a set of eggs was secured, with incubation just commenced.

San Esteban Island was visited April 18, where several Frazer Oyster-catchers (*Hamatopus frazari*) were seen and two sets of nearly fresh eggs were taken. Some Western Gulls (*Larus occidentalis*) were nesting upon the rocky beach just above high-water mark. Land birds were fairly common on this island, which was of considerable size; among them some

hummingbirds and flycatchers were noted and the Desert Sparrow was identified. Western Ravens were quite common, and two pairs of Ospreys (*Pandion haliaëtus carolinensis*) were nesting on top of a large rock at the end of a beach. One of these nests contained a young bird.

Isla Raza was reached April 21. Although this island is on the western side of the Gulf of California, it was so little out of the way that the crossing was made from San Esteban Island in order to find out if Heermann Gulls (*Larus heermanni*) were nesting there, and to collect some sets of their eggs. Great numbers of these gulls were found there, but the impression was created among the party that it was too early for the nesting season, as most of the many nests found scattered about the island were empty. A few were found that contained one egg each, and one with two eggs. It was discovered later that the island was periodically visited by eggers from the mainland who gathered the eggs to sell for food; this accounted for the conditions met with. The nests were scattered about the valleys on the island, usually where there was some shelter from the wind in the way of low-growing shrubs, and were merely depressions in the earth with no lining whatever.

Three nests of the Elegant Tern (*Sterna elegans*) were found on this island, and a few Royal Terns (*Sterna maxima*) were seen, as were also some Western Gulls and California Brown Pelicans. No land birds were noted by any of the party.

Isla Partida was visited April 22. Opposite the anchorage a petrel colony was discovered, situated in a rock slide just at the back of the rocky beach. In the apertures in this slide were countless numbers of bats.

It was found that two species of petrels formed this colony, the Least Petrel (*Halocyptena microsoma*) and the Black Petrel (*Oceanodroma melania*). On April 22 only the Black Petrel was laying, the eggs showing all stages of incubation, but the Least Petrels, although occupying their burrows among the rocks, had not yet commenced to lay.

This island was visited on two other occasions, May 3 and June 24. On May 3 the Least Petrel was laying and a number of sets were secured, all perfectly fresh. It was still laying on

June 25, when a few more sets in all stages of incubation from fresh to advanced were dug out of the rock slide. On this last visit some of the young of the Black Petrel were found just losing the last of the down from the breast.

On Isla Partida land birds were very scarce, a finch being the only one mentioned as having been seen. Royal Terns, Western Gulls, California Brown Pelicans, cormorants, and Frazar Oyster-catchers were noted, while two empty nests of the last species were found.

Patos Island was landed upon April 23, and a Tule Wren (*Telmatodytes palustris paludicola*), in badly worn and faded plumage, was taken, but no record of any other bird appears.

Tepoca Bay, on the coast of the Mexican mainland, was visited April 25, in search of water, and an Osprey's nest on top of a cliff at the beach was examined. This is described as an immense affair, probably three feet high, composed of clean driftwood and sticks, and lined with seaweed. It appeared to be perfectly fresh, but empty, and no birds were seen near it.

Georges Island, the northern limit of the expedition's itinerary, was reached April 26. Here was found a large colony of terns, consisting mostly of the Elegant Tern with a few Royal Terns scattered through it. The number of birds in the colony was estimated at between three and four thousand, most of which were nesting, while the eggs were in all stages of incubation. Of the nesting of the Elegant Tern, Owen says: "The nests were merely slight depressions in the somewhat rocky soil on a flat portion of the island and so close together that one could not walk among them without occasionally crushing an egg. Royal Terns' nests containing eggs were scattered throughout this colony, but most numerous about the outer edge. There were probably about 1000 pairs of Elegant Tern nesting here. No difficulty was experienced in distinguishing between the eggs of the two species of terns, as the size and coloration differ very decidedly.

Some authorities upon the subject state that the Elegant Tern lays from one to three eggs, but most of them discreetly say nothing about the size of the clutch of this species of tern. In his account of the finding of the Elegant Tern breeding on Cerralvo Island, Gulf of California, April 9 to 15, 1910, Mr. Wilmot W. Brown is quoted as saying that "One egg is gen-

erally what they lay, sometimes two, but only rarely." Mr. Slevin states that especial pains were taken by Mr. Owen and himself to ascertain if nests with more than one egg could be found, but they finally agreed that there was absolutely no evidence of this tern laying more than a single egg in the colonies they examined. As above stated, the eggs were often so close together that it was difficult for an observer to avoid crushing some of them under foot when walking among the nests, and sometimes two eggs were found so near each other as to have the appearance of composing a set. The birds, however, kept backing away as the intruders advanced and were so crowded together, as shown by photographs taken by the party, that eggs were more or less rolled around and misplaced as the birds retreated. In addition to this there was an almost constant gale blowing, some of the gusts of which were strong enough to roll eggs around to some extent, so that there was good reason for the finding of two or three eggs together at times in the more crowded areas of the colony. But, in all such instances, the eggs differed so markedly in coloration and pattern that it seemed absurd to assume that they might have been laid by the same bird. The more isolated nests, on the outer edges of the colony, were especially examined, but no unquestioned set of two eggs was found.

In the large series of eggs of the Elegant Tern brought back by the Academy expedition, there are no two quite alike. In fact, with the exception of the absence of the greenish and (cobalt) bluish ground colors that are so often found among the eggs of the murre ( *Uria*, species ), there is practically as much variation among the eggs of the Elegant Tern as among those of the murre. These tern eggs vary in ground-color from pure white through slightly pinkish cream color to a decided maroon, with a more or less distinct pinkish tinge in all except the pure white. Many of the eggs have what seems to be a sort of secondary ground marking of grayish lavender, or sometimes purplish gray, frequently rather faint, generally in the shape of small spots or blotches, though sometimes in fair sized patches. In form the dark markings are anything from streaks, specks, spots, blotches, or wreaths, up to large patches; and from pinkish chocolate to very nearly black in

color, with infinite variation in size, number, shape, and arrangement of these markings.

Not much was recorded by the party in regard to the habits of the Elegant Tern, but it was generally agreed that they did not appreciably differ from those of the Royal Tern.

Although landings were made on Cerralvo Island at three different places, one of which was supposed to be the sandbar where Mr. W. W. Brown found this species breeding in 1910, as referred to above, the Academy party did not come across the Elegant Tern on this island. Three nests were found by Mr. Owen on Isla Raza when the first visit was made to that island April 21. A nest containing one fresh egg was found there on the second visit, May 4. Mr. Owen's data of this set describe the nest as "merely a depression in the earth, in a level, barren area between two ridges. It was several hundred yards back from and probably 100 feet above the water."

In his *Life Histories of North American Gulls and Terns* (Bulletin 113, U. S. Nat. Mus., p. 220), Mr. A. C. Bent gives the measurements of 27 eggs of this species as follows: "average, 53.5 x 38 millimeters; the eggs showing the four extremes, measure **57** x 39, 55 x **40.5**, and **51** x **35.5** millimeters."

Of the Academy's collection three groups of 25, 10 and 10, respectively, taken at random, were measured, the average of the 45 eggs being 54.6 x 36.8 millimeters, while it so happened that the difference in the averages of the three groups was only 1 mm. for each dimension. The extreme measurements are of eggs which were, of course, selected from the whole series. These are: (C. A. S. No. 3501) **60.6** x 39.2; (C. A. S. No. 3494) 52.8 x **40.4**; (C. A. S. No. 3424) **47.8** x 37.2; (C. A. S. No. 3523) 54.2 x **32.6**. In this series there are seven eggs of greater longitudinal diameter, with several others very close to it, and four that measure less than Bent's minimum longitudinal diameter, with several others very close to it, and four that equal or are less than his minimum latitudinal diameter. There is also one "runt" egg, well colored and marked, which is about the size of a pigeon's egg.

In the 111 sets taken of the Royal Tern, all of but one egg each, the smallest egg measured 62 x 44.5 millimeters, showing no overlapping with the eggs of the Elegant Tern in the



respective measurements. The eggs of this species do not exhibit nearly so much variation as do those of the Elegant Tern, and very frequently more than one egg is laid to a set.

The Heermann Gull (*Larus heermanni*) was found nesting on Georges Island, in a small colony. Most of the nests contained eggs about ready to hatch, while many contained young.

In Mr. A. C. Bent's (*op. cit.*) excerpt from the letter of Mr. Pingree I. Osborn describing a breeding colony of the Heermann Gull, the description of the ground-color and markings of the eggs does not coincide very closely with these characters in the series obtained by the Academy expedition.

While there are a number of eggs in our series of which the ground-color is of a sort of pearl gray, there is a very manifest tinge therein which is much more of a brownish cast than would be indicated by the expression "a very slight creamy tinge," as described in the above excerpt. A good many of the eggs are "ashy gray" and "light bluish gray," as Mr. Osborn says, but also a good many have a ground-color that matches very closely the Light Buff, Plate XV, of Ridgway's *Nomenclature of Colors*. Others, again, are very close to the pale Olive Buff, Plate XL, of that work.

The fainter spots and blotches are lavender-gray of varying degrees, but the heaviest markings match the Vandyke Brown, Plate XXVIII, of the above work, but often of a much darker shade than that of the plate.

Of one set of three eggs two are of a bluish white, with very small, faint markings of a pale brown color, looking much like slight stains, while the third egg has the ground color a little more creamy than the other two, but is very evenly and closely covered with fine specks of brown, like a finely speckled egg of the domestic turkey. Quite a number of eggs, on the other hand, are heavily marked with very dark Vandyke Brown at the large end, sometimes in the form of a rough wreath.

As native eggers were systematically robbing the birds of their eggs on the island where most of the Academy's series of Heermann Gulls was obtained, it is not fair to use the average measurements of this series in comparison with those given by Mr. Bent, unless it is kept in mind that they were obtained from eggs of a much disturbed colony. As a matter of fact,

the Academy series averages a good deal less for both dimensions, although most of the *extremes* are greater, the longest egg being **67.5** x 41.8 mm. (set No. 3220, C. A. S. Coll.), the shortest **55.1** x 40.5 mm. (set No. 3198, C. A. S. Coll.), the broadest 62.1 x **45.1** (set No. 3174, C. A. S. Coll.), and the narrowest 58.9 x **35.7** mm. (set No. 3215, C. A. S. Coll.). Mr. Bent gives, for 52 eggs measured, extremes of 64 and 53 millimeters for the longitudinal, with 45.9 and 37.5 millimeters for the latitudinal measurements.

The nests of Heermann Gulls found on this expedition were mere depressions in the earth, with no lining whatever, as has been noted by other observers.

Western Gulls were nesting on Georges Island, most of the nests containing young.

A limited number of the Red-billed Tropic-bird (*Phaëthon æthercus*) and Brewster Booby (*Sula brewsteri*) also were breeding on this island, with incubation far advanced, and a small colony of cormorants (species?), with many young in nests, was seen here. This proves to be the most northerly breeding ground of the Red-billed Tropic-bird, it being about 100 miles north of the island of San Pedro Martir, which has heretofore been considered as the most northerly one. Other than these mentioned above, the only birds noted by the party were six red-winged blackbirds (species ?) and a Long-tailed Chat (*Icteria virens longicauda*).

San Luis Island was visited April 28. A colony of something like 2000 California Brown Pelicans, with young almost ready to fly, was found and Western Gulls were commonly nesting here, with many nests containing young. Half a dozen Reddish Egrets (*Dichromanassa rufescens*) were seen in a small lagoon, and a few empty nests of the Osprey were noted. Very few land birds were seen.

A landing was made on the island of Mejia April 30, but the only birds recorded were "many ravens and one fly-catcher," with one Frazar Oyster-catcher that was secured.

The island of Angel de la Guarda was reached May 1. Mr. Slevin's notes concerning the bird life here are as follows: "Noted few land birds, mostly flycatchers and verdins. Saw an Osprey nest from our anchorage, with parent bird on nest all day long, shielding young from the hot sun. Saw one of the



birds bring a large fish to the nest." A nest with three slightly incubated eggs of the Desert Sparrow (*Amphispiza bilineata deserticola*) was taken on this island, and a male Green-tailed Towhee (*Oreospiza chlorura*) was secured. At Lagoon a colony of Reddish Egrets was found nesting on the ground in the midst of thick brush.

On May 2 a landing was made on Granite Island, where was found a small colony of California Brown Pelicans, all with young, and one of Reddish Egrets with young in most of the nests. The Reddish Egrets were nesting in the salicornia.

Isla Partida was again visited on May 3, as set forth under the first mention of this island. Nothing except petrels was recorded in the way of bird life here.

Isla Raza was visited the second time May 4, to look for eggs of the Heermann Gull. On this occasion the reason for the absence of eggs on the first visit was discovered. Mr. Slevin says, in his notes: "Found eggers on the island collecting eggs as fast as they were laid. The Mexicans cover the island twice a day and very few nests escape them. Consequently [we] found few full sets. Early in afternoon another vessel arrived and sent party ashore after eggs. This date must have been the height of the nesting season and there were several thousand birds about the island." Very few Western Gulls were seen on this visit. A small colony of Royal Terns was found near the landing place, but the birds showed no signs of nesting.

Las Animas Bay, on the peninsula, was visited May 8, but the only bird mentioned as being found there is the White-winged Dove (*Mclopelia asiatica*). Of this species one set of eggs, with incubation just begun, was taken.

The next mention of bird life is on Sal si Puedes, which was visited May 9. A colony of California Brown Pelicans, all with young birds, and a few Heermann Gulls nesting, with eggs about ready to hatch, were the only species recorded in the notes.

On May 10 a landing was made at San Francisquito Bay, Lower California, of which Mr. Slevin's notes say: "Quite a few land birds here, hummingbirds, thrashers, cactus wrens, verdins, quail, and flycatchers." The cactus wren must be the San Lucas species (*Helcodytes brunneicapillus affinis*), but the

verdin mentioned is just on the border line between *Auriparus flaviceps flaviceps* and *Auriparus flaviceps lamprocephalus*. A nest of each of these species was taken; the eggs of the cactus wren were only slightly incubated, but those of the verdin were in an advanced state of incubation.

On San Marcos Island, May 11, only a few land birds were noted, "mostly [San Lucas] House Finches and flycatchers."

On Santa Inez Island, May 13, a couple of young Frazar Oyster-catchers, a few days old, were secured, but no mention is made of any other birds.

Point Sta. Antonita was reached May 16, and a landing made on the peninsula, where land birds were noted as plentiful; Cape Verdin, [San Lucas] Cactus Wren, jays, quail, and gnatcatchers being mentioned in the notes.

The island of Ildefonso was touched at on May 17. Here, at the end of March and in the beginning of April, 1909, Mr. Wilmot W. Brown found "an immense number" of Heermann Gulls nesting at the southeastern end of the island, but the Academy party records only the Blue-footed Booby (*Sula nebouxi*) as nesting there.

Coronado Island was visited May 18, and land birds are reported from there as "fairly common;" flycatchers, Desert Sparrow, hummingbirds, San Lucas House Finch, one duck hawk (*Falco peregrinus anatum*, probably), several Ravens and (Turkey) buzzards being those enumerated.

Carmen Island was reached May 21, and from there are recorded the San Lucas House Finch, White-winged Dove, and San Lucas Cardinal (*Cardinalis cardinalis igneus*).

On Danzante Island a few land birds were noted May 24, verdins and flycatchers being the only ones mentioned, while a Plumbeous Gnatcatcher (*Polioptila plumbea*) was found nesting, with incubation commenced in the three eggs secured, at Puerto Escondido, Lower California. No other birds mentioned at the latter place.

On May 25 a landing was made on Monserrate Island. Some Cape Verdins, flycatchers, and gnatcatchers were noted, but neither of the last two was identified as to species.

Agua Verde Bay, on the peninsula, was visited May 26, and Mr. Slevin's notes contain the following: "Found White-winged Doves abundant. Collected one set of fresh eggs about

six feet up in mesquite tree. Found one other set with young nearly ready to leave nest. [Valley] Quail abundant but rather shy."

On San Josef Island, which was very brushy, San Lucas Cardinals, White-winged Doves, Desert Sparrows, humming-birds and woodpeckers were found to be fairly numerous on May 28.

On May 29, upon San Francisco Island, a few small land birds were seen, and ravens, vultures and Frigate Birds were found to be common.

The south end of Cerralvo Island was reached June 6. Many California Brown Pelicans were on the beach, and land birds, especially hummingbirds, were found to be numerous. The Great Blue Heron (*Ardea herodias sanctilucae*) was nesting there, with eggs in an advanced state of incubation. Sets of eggs of the Cape Verdin and the Desert Sparrow were secured and found to be fresh.

Little mention is made by any member of the party of the bird life seen on the return voyage to Guaymas. The facts are recorded that hundreds of ravens and vultures were seen around the water hole at Angeles Bay, on the Lower California peninsula, June 26; a Wilson Plover (*Ochthodromus wilsonius*), female, was taken on Angel de la Guarda Island, June 30; and that at Pelican Island, on July 5, there were several old Osprey nests in cacti, while countless numbers of Frigate Birds were seen on the sandbar off the east end of the island. No further notes upon birds appear in the records of the expedition after this last date.

#### LIST OF SPECIES NOTED

1. Western Gull (*Larus occidentalis*): San Esteban Island, April 18; Isla Raza, April 21, May 4; Isla Partida, April 22; Georges Island, April 26; San Luis Island, April 28.
2. Heermann Gull (*Larus heermanni*): Isla Raza, April 21, May 4; Georges Island, April 26; Sal si Puedes, May 9.
3. Royal Tern (*Sterna maxima*): Isla Raza, April 21, May 4; Isla Partida, April 22; Georges Island, April 26.

4. Elegant Tern (*Sterna elegans*): Isla Raza, April 21, May 4; Georges Island, April 26.
5. Least Petrel (*Halocyptena microsoma*): Isla Partida, April 22, May 3, June 24; Georges Island, April 26, May 3.
6. Black Petrel (*Oceanodroma melania*): Isla Partida, April 22, May 3, June 24.
7. Red-billed Tropic-bird (*Phaëthon æthereus*): Georges Island, April 26.
8. Blue-footed Booby (*Sula nebouxi*): Ildefonso, May 17.
9. Brewster Booby (*Sula brewsteri*): San Pedro Nolasco Island, April 17, May 3, June 24; Georges Island, April 26.
10. California Brown Pelican (*Pelecanus californicus*): San Pedro Nolasco Island, April 17; Isla Raza, April 21; Isla Partida, April 22; San Luis Island, April 28; Granite Island, May 2; Sal si Puedes, May 9; Cerralvo Island, June 6.
11. Man-o'-war-bird (*Fregata aquila*): San Francisco Island, May 29; Pelican Island, July 5.
12. San Lucas Great Blue Heron (*Ardea herodias sancti-luceæ*): Cerralvo Island, June 6.
13. Reddish Egret (*Dichromanassa rufescens*): San Luis Island, April 28; Angel de la Guarda, May 1; Granite Island, May 2.
14. Wilson Plover (*Ochthodromus wilsonius*): Pelican Island, June 30.
15. Frazar Oyster-catcher (*Haematopus frazari*): San Esteban Island, April 18; Isla Partida, April 22; Mejia, April 30; Santa Inez Island, May 13.
16. Valley Quail (*Lophortyx californica vallicola*): San Francisquito Bay, Lower California, May 10; Pt. Santa Antonita, May 16; Agua Verde Bay, Lower California, May 26.
17. White-winged Dove (*Melopelia asiatica*): Las Animas Bay, Lower California, May 8; Carmen Island, May 21; Agua Verde Bay, Lower California, May 26; San Josef Island, May 28.

18. Turkey Vulture (*Cathartes aura septentrionalis*): Coronado Island, May 18; San Francisco Island, May 29; Angeles Bay, June 26.
19. Duck Hawk (*Falco peregrinus anatum*): Coronado Island, May 18.
20. Osprey (*Pandion haliaëtus carolinensis*): San Esteban Island, April 18; Tepoca Bay, Lower California, April 25; San Luis Island, April 28; Angel de la Guarda, May 1; Pelican Island, July 5.
21. Ash-throated Flycatcher (*Myiarchus cinerascens cinerascens*): San Pedro Nolasco Island, April 17.
22. Western Raven (*Corvus corax sinuatus*): San Pedro Nolasco Island, April 17; San Esteban Island, April 18; Mejia, April 30; Coronado Island, May 18; San Francisco Island, May 29; Angeles Bay, Lower California, June 26.
23. San Lucas House Finch (*Carpodacus mexicanus ruberrimus*): San Pedro Martir Island, April 18; San Marcos Island, May 11; Coronado Island, May 18; Carmen Island, May 21.
24. Western Chipping Sparrow (*Spizella passerina arizonæ*): San Pedro Nolasco Island, April 17.
25. Desert Sparrow (*Amphispiza bilineata deserticola*): San Pedro Nolasco Island, April 17; San Esteban Island, April 18; Angel de la Guarda, May 1; Coronado Island, May 18; San Josef Island, May 28; Cerralvo Island, June 6.
26. Green-tailed Towhee (*Oreospiza chlorura*): Angel de la Guarda, May 1.
27. San Lucas Cardinal (*Cardinalis cardinalis igneus*): Carmen Island, May 21; San Josef Island, May 28.
28. San Lucas Cactus Wren (*Heleodytes brunneicapillus affinis*): San Francisquito Bay, Lower California, May 10; Pt. Santa Antonita, May 16.
29. Tule Wren (*Telmatodytes palustris paludicola*): Patos Island, April 23.
30. Verdin (*Auriparus flaviceps flaviceps*): Angel de la Guarda, May 1; San Francisquito Bay, May 10.

31. Cape Verdin (*Auriparus flaviceps lamprocephalus*): Pt. Santa Antonita, Lower California, May 16; Danzante Island, May 24; Monserrate Island, May 25; Cerralvo Island, June 6.
32. Plumbeous Gnatcatcher (*Polioptila plumbea*): Puerto Escondido, Lower California, May 24.